A SPECIMEN

MAINTENANCE SCHEDULE

For a

twin engined Aircraft
of an all up weight of
approximately 6,000 lb

PRICE 2/6

THE SOCIETY OF LICENSED AIRCRAFT ENGINEERS
FINSBURY CIRCUS HOUSE, BLOMFIELD STREET
LONDON, E.C.2

FOREWORD

AS every Licensed Aircraft Engineer knows, it is the responsibility of the owner or hirer of public transport aircraft to provide maintenance schedules, which must have the approval of the Air Registration Board. In the case of large aircraft, which are normally operated by the big airlines, the organization concerned, *i.e.*, B.O.A.C., B.E.A., etc., usually have a department whose task it is to compile the schedule and submit it to the A.R.B. for approval. However, in the case of smaller lines operating smaller aircraft, the task of preparing the schedule is generally undertaken by their Licensed Aircraft Engineers.

The experience of the Air Registration Board has shown that as a general rule the schedules submitted for approval leave very much to be desired, both in the lay-out of the schedule and the information given in them. An exception to this general rule are the schedules prepared by one of the Society's General Council members, Mr. W. W. GILHAM, A.M.S.L.A.E., particularly his most recent one for a popular twin engined aircraft.

The Society has for some time past had in mind the desirability of publishing a specimen maintenance schedule for the guidance of its members and, on the suggestion of the Air Registration Board, the Technical and Publications Panel has decided to publish the one prepared by Mr. GILHAM. The Panel would like to offer their thanks to the Air Registration Board for their assistance in carrying out various minor amendments in so far as the manner in which the information is given.

The specimen can be adapted to suit almost any type of aircraft by omitting certain of the information and substituting information relating to another type, but it cannot be too strongly emphasized that it should not be copied verbatim, except in cases where it happens to fit in with the kind of operations to be undertaken by the firm seeking approval of the schedule.

Particular attention is drawn to the fact that if the work detailed in the schedule is properly done and properly certified there should be no need for an annual overhaul of the aircraft prior to the renewal of the Certificate of Airworthiness, but the decision as to whether the work has been properly done must rest with the Air Registration Board. It cannot, however, be too strongly emphasized that adequate documentation on the work carried out will play a large part in the local A.R.B. surveyor's recommendations.

If, when the Certificate of Airworthiness is due for renewal, the Air Registration Board is satisfied that the work has been properly carried out, then all that will be necessary, subject to confirmation by the Board's Surveyor, is a general inspection of the aircraft, a fuel flow test, a re-weigh of the aircraft and the preparation of a weight schedule, and satisfactory completion of a test flight.

M. T. HOLDHAM, M.S.L.A.E.,
Chairman,
Technical and Publications Panel,
The Society of Licensed Aircraft Engineers.

Hatfield, 1948.

SPECIMEN

MAINTENANCE SCHEDULE

FOR

A TWIN ENGINED AIRCRAFT OF AN ALL UP WEIGHT OF APPROXIMATELY 6,000 LB.

Employed on General Charter flying in the United Kingdom, Europe and Africa.

Schedule Reference : ..... *Issue No.* : ..... *Date of Issue* : .....

Owner's Name : .....

CHECK CYCLES

Inspections in this schedule must be completed in accordance with the following cycle :—

Pre-Flight inspection		
After every 25 hours flying	Check 1	Tolerance Nil.
After every 50 hours flying	Check 2	Tolerance 3 hours.
After every 150 hours flying	Check 3	Tolerance 6 hours.
After every 300 hours flying	Check 4	Tolerance 9 hours.
After every 600 hours flying	Check 5	Tolerance Nil.

All the above checks are cumulative. Thus, when completing any given check all earlier checks must also be included, *e.g.*, a check 3 will include checks 1 and 2.

Certificates of Safety must be issued on the completion of each Check 1. *Note.—Until such time as the regulations are amended, probably on the 1st April, 1949, Certificates of Safety must be issued on a daily basis.*

MANDATORY NOTES.

1. *Compasses* are to be compensated after an engine change and whenever the accuracy of their readings becomes suspect.

2. *Lifebelts.* When over water flights are contemplated, the lifebelts must be examined for serviceability daily. At least once every three months the lifebelts must be inflated, tested, CO_2 bottles weighed, and the weights recorded.

INTRODUCTION

The Pre-Flight inspection and Check 1 are arranged so that they may be detached from the schedule and carried in the aircraft to enable these inspections to be completed away from base.

If it is anticipated that the aircraft will not return to its base for a period exceeding that at which the Check 2 and subsequent checks are to be completed, the complete schedule must be carried in the aircraft together with a copy of the Air Registration Board letter of approval.

CHECK 2	
MAINPLANES Aileron and Flap hinges	Security Lubricate

Checks 2, 3, 4 and 5 are set out in four main columns each of which contain two further sub-divisions. The left hand side of each column states the component(s) that are to be examined whilst the right hand side specifies the requirement(s) of the inspection and/or the work to be completed. The example given will clarify the method of reading these checks :—

The left hand side of the column details the aileron and flap hinges as the components requiring attention; the right hand side states " Security : Lubricate." This is to be interpreted to read " Examine the aileron and flap hinges for security and lubricate after the result of the inspection is found to be satisfactory."

Any damage or defect affecting safety found during such an inspection must be rectified before the aircraft flies again.

AMENDMENTS

AMENDMENTS*

Amendments to this schedule will arise from the following sources :—

1. Mandatory amendments promulgated by the Air Registration Board.
2. Amendments which have been requested by the owners or hirers of the aircraft and approved by the Board.

Amendments originating under (1) may arise as the result of defects or experience gained by other operators. In this connection owners or hirers should submit to the Board suggestions arising from their maintenance experience in order that these can be considered with a view to future amendment of this schedule.

Mandatory amendments will be allotted consecutive reference numbers by the Board and their incorporation in the schedule must be recorded by making an entry in the appropriate columns provided below. The amendment reference must also be recorded in the margin of the page against the amendment entry.

No amendment is to be made to this schedule unless approval, in writing, has been given by the Air Registration Board.

Amendment No.	Date Incorporated	Amendment No.	Date Incorporated

Amendment No.	Date Incorporated	Amendment No.	Date Incorporated

* *Numbering system.*—Amendments requiring the deletion or addition of a numbered section will not necessitate the renumbering of the schedule. Deleted numbers will be left blank. Additional sections will bear the number of the preceding section followed by a letter in alphabetical order (*i.e.*, the addition of three sections between Sections Nos. 96 and 97 of the Schedule will be designated 96A, 96B and 96C).

PRE-FLIGHT INSPECTIONS

NOTE :—*Any defect affecting safety must be rectified before the aircraft flies again.*

Aircraft Structure

1. All coverings ... ... Examine for damage and security, particularly the under surfaces.

Remove any accumulations of hoar-frost, snow or ice from all aerofoil surfaces immediately prior to flight.

Main and Tail Wheel Assemblies

2. Structure, compression legs and wheels — Clean and examine for damage and security. Ensure that the main wheel compression legs rest at equal lengths.

3. Tyres ... ... Check that pressures appear normal and tyres are not damaged.

4. Main wheel fairings ... ... Examine for damage and security.

Flying Controls

5. Locking device ... ... Ensure removal and correct stowage immediately prior to flight.

6. All control surfaces ... ... Examine for damage and security and ensure that they operate correctly and freely over the full range of movement. Remove any accumulations of hoar-frost, snow or ice immediately prior to flight.

Air Speed Indicator System

7. Pitot head ... ... Remove cover immediately prior to flight.

Instruments

8. Instruments and panel ... ... Examine the panel for security. Clean the glasses of the instruments and ensure that the instruments and their glasses are undamaged. Check that all bezels are tight.

Electrical Installation

9. Accumulator ... ... Test voltage on load.

Equipment

10.	Seats and safety belts (or harness) ...	Examine for damage and security. Check locking devices for correct functioning.
11.	Pyrotechnic signalling equipment ...	Ensure that complement is correct and securely stowed
12.	Sanitary container (if fitted)	Remove, clean, flush and re-charge the container.
13.	Loose equipment, baggage, etc. ...	Ensure secure stowage.

Safety Equipment

14.	Lifebelts	Check for correct stowage and serviceability.
15.	Fire extinguishers	Ensure that extinguishers are securely stowed and that they have not been discharged.
16.	Axe(s)	Ensure axe(s) are securely stowed.
17.	First Aid Stowage	Ensure that the seal on the First Aid pack is unbroken and that the pack is securely stowed. If stowage is covered by a " tear-off " patch ensure that the patch has not been opened.

General

18.	Aircraft	Clean internally and externally.
19.	All doors, zip or lace fastenings, inspection panels, fairings, etc.	Ensure that items are closed and secured immediately prior to flight.

CHECK 1

NOTE :—*1. Any defect affecting safety must be rectified before the aircraft flies again.*

2. A Certificate of Safety must be issued immediately on completion of every Check 1

Fuselage

20.	Fabric covering	Examine for damage and security.
21.	Emergency exits in roof	Examine for security, leakage, damage and correct marking.
22.	All doors and hinges	Examine for damage and security ; check the door locks for correct functioning.

23.	Pivoted side panels in pilot's cabin ...	Inspect for cracks and other damage ; ensure that the locking devices function correctly.
24.	Windscreen and transparent panels ...	Examine for cracks or other damage.

Main Planes

25.	Fabric covering	Examine for damage and security.
26.	Plywood covering of the wing tips and leading edges	Examine for signs of splitting, excessive surface buckles and other damage.
27.	Interplane bracing and incidence wires	Check for adequate tension and ensure that the spacers are secure.
28.	Plywood covering of ailerons	Examine for signs of splitting, excessive surface buckles and other damage.
29.	Flaps	Examine metal skin and components for damage and distortion.

Tail Unit

30.	Plywood covering of tailplane and fin ...	Examine for signs of splitting, excessive surface buckles and other damage.
31.	Fabric covering of elevators and rudder	Examine for damage.
32.	Fin root fairing fillets	Examine for security.
33.	Tailplane bracing wires	Check for adequate tension and ensure that attachment lugs pivot freely throughout the full range of tailplane movement.

Main and Tail Wheel Assemblies

34.	Tyres	Remove all mud, oil and grease and inspect the tyres for deep cuts and other damage. Check the tyres for creep and correct air pressure ; ensure that the valve caps are securely replaced.
35.	Wheels	Check for damage.
36.	Compression legs	Check action of legs ; ensure that the main wheel legs rest at equal lengths.
37.	Main wheel fairings	Check for cleanliness, damage and security.

Brake System

38.	Brake control lever	Examine for security and ensure that ratchet functions correctly. Check that the cable connection to the lever is undamaged and secure.
39.	Brakes	Check for correct functioning.

Flying Controls

40.	Aileron, flaps, elevator, rudder and tail incidence controls	Check for correct operation and ensure that full and free movement is obtained. Return controls to their neutral positions and lock, if necessary.
41.	Control column check cable	Examine for damage and security.
42.	Flaps	Ensure that the flap control locking device functions correctly and that the flaps, when UP, are flush with the lower surface of the mainplanes.
43.	Aileron interplane connecting rods ...	Ensure that the rods do not foul the struts.

Vacuum System

44.	Exhaust venturis ... ... Inlet manifold connections	Examine for security.

Air Speed Indicator System

45.	Pitot head	Examine for damage and security and ensure that the air vents in the static tube are not obstructed. Fit cover if necessary.
46.	Pipelines	Drain, if moisture accumulations are suspected ; check for leaks.

Instruments

47.	Instruments and panel	Examine the panel for security. Clean the glasses of the instruments and ensure that the instruments and their glasses are undamaged. Check that all bezels are tight.
48.	Rate-of-climb indicator...	Check zero setting.
49.	Altimeter	Set subsidiary scale to read barometric pressure of the day at the aerodrome and ensure that the pointers indicate within the permissible tolerance of zero.
50.	Clock	Set to the correct time, and, if necessary, wind.
51.	Compass	Examine for damage and security. Ensure that the grid ring, lock and anti-vibration devices function satisfactorily and that the bowl is not discoloured. Check that bubbles are not present in the fluid.
52.	Air-speed indicator	Check for satisfactory functioning.
53.	All corrector and compass deviation cards	Ensure that the cards are legible and secure.

Electrical Installation

54.	D.C. generator	Examine the blades of the windmill for damage and security.

55.	Accumulator	Examine for security, signs of overcharging, leakage of the electrolyte and corrosion in the vicinity of the stowage. Ensure that air vents are clear and cable connections are secure. Test voltage on load and ensure that accumulator is fully charged.
56.	External supply socket...	Examine, externally, for cleanliness, damage and security. Rotate the cover against the spring and ensure that the return movement is not sluggish.
57.	Fuses and spares	Ensure that they are serviceable and of the correct value and type.
58.	Pitot head heating element	Switch ON and ensure that element warms up satisfactorily. Return switch to OFF within 5 minutes. Alternatively, check that current consumption of the element, when hot, is approximately 4 amps.
59.	All lamps and lighting services... ...	Test for correct operation (landing lamps must not be left ON for more than 10 seconds). Return all switches to OFF.
60.	Identification lamp morsing key ...	Test circuit for correct operation.

Radio

61.	Masts, aerials and all radio attachments	Examine for security.

Equipment

62.	Seats and safety belts (or harness) ...	Examine for damage and security. Check locking devices for correct functioning.
63.	Sunblinds	Check for satisfactory operation.
64.	Pyrotechnic signalling equipment ...	Ensure that complement is correct and securely stowed.
65.	Windscreen wiper (if fitted)	Check functioning on a wetted windscreen ; ensure that wiper components are secure.
66.	Sanitary container (if fitted)	Remove, clean, flush and re-charge the container. Inspect structure surrounding the container for signs of fluid leakage and corrosion.

Safety Equipment

67.	Lifebelts	Check for correct stowage and serviceability.
68.	Fire extinguishers	Ensure that extinguishers are securely stowed and that they have not been discharged.
69.	Axe(s)	Ensure axe(s) are securely stowed.
70.	First aid stowage	Ensure that the seal on the First Aid kit is unbroken. If stowage is covered by a " tear-off " patch ensure that the patch has not been opened.

General

71.	All drainage eyelets, holes, etc. ...	Ensure that they are unobstructed.
72.	Aircraft	Clean internally and externally.
73.	All doors, zip or lace fasteners, inspection panels, fairings, etc.	Examine for damage.

AIRFRAME

CHECK 2

Fuselage

74.	Plywood structure ..	Splits, excessive surface buckles or other obvious damage.
75.	Floor	Damage and security.
76.	Cabin door locks and hinges.	Lubricate.
77.	Cabin door emergency release (if fitted)	Damage. Lubricate.

Main Planes

87.	Structure	Signs of damage internally and slack bracing wires.
88.	Interplane bracing struts	Damage and security. Ensure that the inboard rear struts are not bowed—see Manufacturer's Technical News Sheet.
89.	Interplane bracingwire attachments	Cracks, slackness and distortion.
90.	Interplanebracing wire spacers	Damage and excessive wear.
91.	Aileron and flap hinges	Security. Lubricate.
92.	Gap and root fairings	Damage. Correct fitment. Security.

Tail Unit

108.	Tailplane and fin ..	Security and signs of damage internally.
109.	Bracing wire attachments	Security.
110.	Tailplane pivots, elevator and rudder hinges	Security. Lubricate.
111.	Elevator and rudder trailing edges	Damage.
112.	Rudder mass balance	Security.

CHECK 3

Fuselage

78.	Diagonal tubular bracing replacing front bulkhead (if fitted)	Damage and security.

Main Planes

93.	Interplane bracing wires	Corrosion, particularly at the clips and spacers.
94.	Aileron and flap hinges	Excessive wear.

Tail Unit

113.	Bracing wires	Corrosion, particularly at the attachment fittings.
114.	Elevator and rudder hinges	Excessive wear.

CHECK 4		CHECK 5	
Fuselage		**Fuselage**	
79. Wooden members ..	Mould, shrinkage, deterioration and distortion.	**82.** Longerons and capping strips at rear end of fuselage and in vicinity of pilot's cabin floor *Note* :–Remove capping strips	Water soakage and other damage.
80. Glued joints	Deterioration and failure.	**83.** All metal components and attachment fittings	Cracks, corrosion and security.
81. Cabin door emergency release (if fitted)	Fraying, corrosion and security of cables. Correct functioning.	**84.** Emergency exits (passenger cabin) ..	Operate and renew.
		85. Emergency exit (Pilot's cabin) ..	Operate and renew sealing strip.
		86. Fabric covering ..	Deterioration.
Main Planes		**Main Planes**	
95. Attachments of upper main plane and stub plane to fuselage	Damage, corrosion and security	**101.** Wooden members ..	Splitting, shrinkage, mould, deterioration, failure of glued joints and other damage.
96. Exposed portions of stub plane rear spars behind each fuel tank	Cracks and other damage.	**102.** All metal components and attachment fittings	Cracks, distortion, corrosion, elongation of bolt holes and other damage. Security.
97. Interplane bracing struts	Cracks and corrosion, particularly under fittings and fabric covered parts.	**103.** Fabric covering, stitching and stringing	Deterioration and security.
98. Outboard interplane struts incidence adjusters	Damage and security.	**104.** Interplane bracing struts.	Bowing.
99. All exposed metal fittings	Corrosion and security.	**105.** Interplane bracing wires *Note* :— Remove spacers	Deterioration of protective treatment.
100. Spars	Compression shakes, particularly in vicinity of outer plane bracing strut attachments.	**106.** Attachment and hinge pins, bolts, etc.	Wear, chafing, stretch and corrosion. Elongation of holes.
		107. Internal bracing wires	Corrosion, other damage, correct tension and security.
Tail Unit		**Tail Unit**	
115. All exposed metal fittings	Corrosion and security.	**116.** Wooden members ..	Splitting, shrinkage, mould, deterioration, failure of glued joints and other damage.
		117. All metal components and attachment fittings	Cracks, distortion, corrosion and elongation of bolt holes. Security.
		118. Fabric covering, stitching and stringing	Deterioration and security.
		119. Bracing wires	Deterioration of protective treatment.
		120. Tailplane pivots, attachments and hinge pins, bolts, etc.	Wear, chafing, stretch and corrosion. Elongation of holes.

AIRFRAME

CHECK 2

Main Wheel Assemblies

121.	Structure and bracing struts	Cleanliness, damage and security.
122.	Compression legs ..	Security. Lubricate.
123.	Compression leg attachment fittings	Security and cracks, particularly at the welds.
124.	Wheel hub bearings ..	Lubricate.
125.	Wheels	Security.

Tail Wheel Assembly

144.	Compression leg and wheel fork	Scoring of compression leg tube. Security. Lubricate.
145.	Compression leg attachment fittings	Security and cracks particularly at the welds.
146.	Compression leg rubbers	Excessive settling down. Deterioration of the rubber blocks—if frequent adjustment has been found necessary.
147.	Compression leg sliding portion. Tail wheel fork hinge bearings. Tail wheel hub bearings	Lubricate.

Brake System

154.	Control lever pivot, ratchet, pawl and plunger	Cleanliness. Correct engagement of ratchet and pawl. Lubricate.
155.	Compensating gear, lever guides, pin joints and cross shaft pivots	Cleanliness. Security. Lubricate.
156.	All brake cables ..	Security. Fraying, particularly where they pass over pulleys or through fairleads. Correct adjustment. Lubricate end connections.
157.	Pulleys	Free rotation. Security.

CHECK 3

Main Wheel Assemblies

126.	Wheels, bearings, axles and fittings	Wear, cracks, corrosion and other damage. Pack bearings with grease on reassembly.
127.	Wheel hub covers and attachments	Deterioration of covers. Serviceability of attachments
128.	Bracing struts and anchorages.	Slackness, corrosion and damage.
129.	Brake linings and drums	Excessive wear, scoring freedom from oil or grease.
130.	Cam blocks and primary shoes	Correct clearances.
131.	Brake unit springs and operating cable attachments	Serviceability of springs. Security of cable attachments.
132.	Brake back plate ..	Cracks, corrosion, distortion, shearing, loose bolts and other damage. Security.
133.	Brake shoes, operating lever, fulcrum pin and pivot bolts	Cracks, corrosion, distortion and other damage. Security. Lubricate fulcrum pin and pivot bolts.
134.	Star wheel	Corrosion and other damage. Lubricate.
135.	Brake unit	Correct assembly. Adjustment. Satisfactory operation.

Tail Wheel Assembly

148.	Wheel bearings, axle and fittings *Note* :—Remove and clean wheel	Wear, cracks, corrosion and other damage. Pack bearings with grease on reassembly.

Brake System

158.	Cables	Corrosion.

CHECK 4		CHECK 5	
Main Wheel Assemblies		**Main Wheel Assemblies**	
136. Compression legs and attachments	Corrosion. Scoring of compression leg tubes.	**138.** Tyres .. .. .. *Note* :—Remove	Deep cuts, bulges, abrasions and other damage, particularly to carcass cords.
137. Compression leg gaiters *Note* :—Remove	Deterioration. Pack with grease on reassembly.	**139.** Tubes .. .. .. *Note* :—Remove	Deterioration, chafing and other damage, particularly in vicinity of inflation valve.
		140. Compression legs .. *Note* :—Remove, dismantle and clean components	Scoring and excessive wear of sliding tubes. Serviceability of springs. Distortion of damping cones. Security of internal assemblies.
		141. Bracing struts.. ..	Excessive bowing.
		142. Attachment bolts and fittings	Wear, cracks, chafing, stretch and corrosion. Elongation of holes in fittings and wooden members.
		143. Wheel assemblies ..	Correct alignment and track.
Tail Wheel Assembly		**Tail Wheel Assembly**	
149. Compression leg, attachments and wheel fork	Corrosion.	**150.** Tyres .. .. .. *Note* :—Remove	Deep cuts, bulges, abrasions and other damage, particularly to carcass cords.
		151. Tubes .. .. .. *Note* :—Remove	Deterioration, chafing and other damage, particularly in vicinity of inflation valve.
		152. Compression leg .. *Note* :—Remove, dismantle and clean components	Scoring and excessive wear of sliding tubes. Deterioration of rubber blocks.
		153. Attachment bolts and fittings	Wear, cracks, chafing, stretch and corrosion. Elongation of holes in fittings and wooden members.
Brake System		**Brake System**	
159. Control lever pivot, ratchet, pawl and plunger	Excessive wear. Corrosion.	**162.** Compensating gear .. *Note* :—Dismantle and clean	Excessive wear of pins. Damage to or deterioration of components. Lubricate all pivot pins, joints, etc., on reassembly.
160. Pulleys	Excessive wear. Lubricate.	**163.** Cables .. .. .. *Note* :—Withdraw cables	Excessive wear or other damage.
161. Compensating gear return springs	Adequate tension. Corrosion or other damage. Security.	**164.** Functional test ..	Correct operation of entire system after reassembly.

AIRFRAME

CHECK 2

Flying Controls

165.	Control column .. Rudder bar and pedals. Aileron and elevator relay, levers beneath pilot's seat. Aileron control levers. Aileron interplane connecting rods, levers and push-rods. Elevator and rudder intermediate levers. Elevator and rudder intermediate control rods. All cable connections to, and bearings and attachments of, the above items.	Cleanliness. Security. Lubricate.
166.	Flap handle and pivots	Cleanliness, damage, security and lubricate. Ensure handle operates satisfactorily.
167.	Flap control cables ..	Ensure cables are adjusted in accordance with Manufacturer's Technical News Sheet.
168.	Flap torque tube :— Bearing brackets Sleeve couplings and actuating levers. Universal joints and pin joints of actuating links.	Cleanliness, security and lubricate. Saturate felt lubricators with oil.
169.	Tailplane incidence control wheel and screw thread and drum of position indicator.	Cleanliness, security and lubricate.
170.	Tailplane incidence screw jack	Cleanliness, security, lubricate. Ensure that the rivets securing the end collar to the torque tube are secure—see Manufacturer's Technical News Sheets.
171.	Tailplane incidence stabilising guides, control drum and cable	Cleanliness, security, lubricate.
172.	Rudder bias control and screw threads	Cleanliness. Security. Lubricate threads.
173.	All cables and splices	Fraying and corrosion particularly where they pass over pulleys or through fairleads. Ensure that fouling cannot occur through incorrect tension, foreign matter, loose guides, incorrectly stowed equipment, etc.
174.	All cable pins, turnbuckles and shackles	Damage. Security. Lubricate.
175.	All control pulleys and cable guards	Cleanliness, damage and security. Lubricate. Ensure pulleys rotate freely and guards are correctly aligned.

CHECK 3

Flying Controls

176.	Control column chain and sprockets	Cleanliness. Security. Lubricate.
177.	Aileron, elevator and rudder control rods	Corrosion, wear and damage; ensure they are not chafed where they pass through fairleads.
178.	Aileron interplane connecting rods, levers and push rods	Corrosion, wear and damage; ensure that the adjustable ends are secure.
179.	Flap torque tube, bearing brackets, sleeve couplings, actuating levers and links	Corrosion, wear and damage.

CHECK 4

Flying Controls

180.	Control column pivots bearings and sprockets Rudder bar and pedal pivots and pin joints Aileron and elevator relay levers beneath pilot's seat. Aileron control lever pivots. Aileron interplane connecting rods, levers and push rod pivots Flap operating handle and pivot. Tailplane incidence stabilising guides, control drum and cable Tailplane screw jack fibre rubbing band. Aileron, elevator and rudder intermediate lever pivots, bearings, etc. Cable connections to, and bearings and attachments of, the above items	Excessive wear and, where appropriate, ball bearings for slackness.
181.	Aileron differential control pulley in outer plane *Note* :—Remove and clean	Corrosion, excessive wear and other damage. Lubricate bearings on reassembly.
182.	All control pulleys and cable guards	Corrosion and excessive wear.

CHECK 5

Flying Controls

183.	Rubber pads on rubber pedals	Deterioration and wear.
184.	Tailplane incidence screw jack *Note* :—Remove, clean and dismantle	Excessive wear and corrosion.
185.	Cables	Damage, strain and deterioration of protective treatment.
186.	Cable pins and end connections	Excessive wear and corrosion of pins, etc. ; ensure that holes in end fittings are not elongated.
187.	All control systems ..	Correct range of movement.

AIRFRAME

CHECK 2		CHECK 3	
Vacuum System		**Vacuum System**	
188. Venturis	Cleanliness. Damage and defects.	**190.** Rubber joints in vicinity of engine installation	Deterioration and clips secure.
189. Suction regulating valve	Clean filter. Ensure valve is not sticking. Check adjustment.	**191.** Flexible pipelines ..	Kinks, chafing, deterioration and other damage. Clips secure.
Air Speed Indicator System		**Air Speed Indicator System**	
198. Pipelines	Drain and blow through pipelines with dry air. Reconnect unions, etc. Test for leaks.	**200.** Rubber joints.. ..	Deterioration and clips secure.
199. Pitot head	Check setting.		
Cabin Heating and Ventilating System—If fitted		**Cabin Heating and Ventilating System**—If fitted	
205. Heating ducts ..	Damage and security.		
206. Control valve.. ..	Correct functioning. Lubricate bearings.		
207. Fresh air inlets ..	Damage and security.		
Instruments		**Instruments**	
208. All relevant instruments, their attachments, and cables or pipeline connections	Security.		
209. Direction indicator, .. Artificial horizon	Cleanliness of filters. Renew if necessary.		
210. Turn-and-slip indicator	Clean filter.		
211. Compass corrector box	Security.		
Electrical Installation		**Electrical Installation**	
217. D.C. Generator ..	Spin windmill and check for freedom of armature rotation. Ensure that the generator and cable connections are clean and secure.	**222.** D.C. Generator ..	Clean commutator and brush gear. Commutator for scoring. Brushes for excessive wear and for freedom of movement in their holders. Springs for correct tension.
218. Accumulator	Check state of charge or fit a freshly charged unit. Clean and grease terminals and ensure cable connections are secure.	**223.** Terminals and connections in panels and junction boxes. **224.** Cable connections to panels, fuseboxes, terminal blocks, plugs, sockets, switches, lampholders, etc.	Cleanliness. Damage. Corrosion. Security.
219. Voltmeter, ammeter, and other components on 604 panel	Cleanliness. Correct functioning. Security.		

(Continued on next page)

(Continued on next page)

CHECK 4		CHECK 5	
Vacuum System		**Vacuum System**	
192. All pipelines	Damage, corrosion and security. Correctly supported.	**197.** All rubber pipes and connections	Deterioration.
193. Venturis .. .. *Note* :—Remove	Clean and examine for corrosion.		
194. Suction regulating and check valves *Note* :—Remove	Dismantle and clean. Examine components for damage and valve for distortion. Assemble valves and refit.		
195. Non-return valve in pipeline from induction manifold *Note* :—Remove	Dismantle and clean. Examine for damage. Assemble and refit.		
196. System test	Complete a test of entire system.		
Air Speed Indicator System		**Air Speed Indicator System**	
201. All pipelines	Damage, corrosion and security. Correctly supported.	**203.** All rubber pipes and connections.	Deterioration.
202. Pitot head	Corrosion.	**204.** Pitot head .. .. *Note* :— Dismantle completely	Corrosion internally and other damage.
Cabin Heating and Ventilating System—If fitted		**Cabin Heating and Ventilating System**—If fitted	
Instruments		**Instruments**	
212. Compass corrector ..	Correct alignment fore-and-aft and athwartships.	**213.** Instrument panel mountings	Damage and deterioration.
		214. Rate of climb indicator Altimeter *Note* :—Remove items	Calibration check. Leakage test.
		215. Air speed indicator ..	Calibration check. Fit new corrector card.
		216. Suction gauge.. ..	Calibration check.
Electrical Installation		**Electrical Installation**	
229. D.C. Generator ..	Bearings for end play and lack of lubrication.	**230.** External supply socket	Clean contacts and examine for pitting and burning. Check gap setting. Lightly lubricate.
		231. Cables	Deterioration of insulation, particularly where cables are liable to contact fuel, oil, grease or fluid. Complete an insulation test.
		232. Conduits	Ingress of oil or moisture particularly at exposed positions. Examine plug and sockets for corrosion ; lubricate nut threads.

(Continued on next page)

(Continued on next page)

AIRFRAME

CHECK 2	CHECK 3
Electrical Installation (*Continued*)	**Electrical Installation** (*Continued*)
220. Cables and conduits .. Cuts, chafing, oil soakage and other damage. Correctly supported and clips, etc., tight.	**225.** Lamps .. .. .. Discolouration, loose caps and sagging filaments.
221. Conduit plug and socket connections Tight.	**226.** Lamp glasses, screens, moulded covers, etc. Cleanliness, damage and security.
	227. Relay switches .. Clean contacts. Check for correct functioning and adjust if necessary.
	228. Suppressor .. .. Cleanliness, damage and security. Inspect for wax seepage from condensers and security of condensers and coils. Ensure internal connections are tight and properly locked.
Radio	**Radio**
Equipment	**Equipment**
238. Upholstery .. .. Damage and security.	**240.** Sunblinds .. .. Damage and deterioration.
239. Radio operator's table —if fitted Damage and security.	
Safety Equipment	**Safety Equipment**
243. Fire extinguishers .. .. .. Check contents by weighing and record weight. Examine mounting brackets for damage, corrosion and security. *Note* :—Remove	**244.** Fire extinguisher safety clip connecting wires Security and corrosion at the soldered joints.
General	**General**

CHECK 4		CHECK 5	
Electrical Installation (*Continued*)		**Electrical Installation** (*Continued*)	
		233. Pitot head heating element. Suppressor	Test insulation resistance.
		234. Bonding and screening	Cleanliness, corrosion, other damage and security. Test continuity of bonding.
		235. Tail wheel tyre ..	Test conductivity.
		236. Starter magnetic relay switches	Clean contacts and examine for pitting and burning. Ensure switch is not damaged.
Radio		**Radio**	
237. Aerial attachments, masts and all attachments of radio apparatus	Corrosion and other damage.		
Equipment		**Equipment**	
241. Seats and carpets .. *Note* :—Remove	Condition of attachment fittings. Ensure that seat feet are not corroded, distorted or otherwise damaged.		
242. Windscreen wiper blades and rubbers	Examine blades for damage and rubbers for deterioration. Lubricate blade pivots.		
Safety Equipment		**Safety Equipment**	
General		**General**	
		245. Aircraft rigging and symmetry	Check.

PRE-FLIGHT INSPECTIONS

Note:—Any defect affecting safety must be rectified before the aircraft flies again.

Propellers

246. Surfaces ... ... Remove any accumulations of hoar-frost, snow or ice, immediately prior to flight.
Examine for damage.

247. Boss securing nuts ... ... After fitting a propeller, and following each of the first three flights, check tightness of the boss securing nuts

248. Spinner ... ... Inspect for damage and security.

Carburation

249. Air intake and, if fitted, ice guard ... Ensure free from obstruction.

250. Induction manifold drain pipe ... Ensure that the pipe is unobstructed.

Controls

251. Throttle and mixture ... ... Test for freedom of movement and ensure that the air intake shutter functions correctly when the throttle controls are operated and that the friction dampers function satisfactorily.

Fuel System

252. Fuel pumps ... ... Test for correct functioning by operating the priming levers. Ensure that the drain pipes are unobstructed and the filter bowls are secure.

253. Tanks ... ... Replenish as necessary and ensure that the difference in the contents indicator readings for each tank, before and after replenishment, agree with the amount of fuel added. Ensure that the filler caps are securely replaced and that the tank vents are unobstructed. Stow tank dipstick securely.

254. Pipelines and components ... ... With the tank cocks turned ON inspect for obvious leaks.

255. Priming pump ... ... Ensure that pump is screwed up tightly after use.

Oil System

256.	Tanks	Replenish as necessary and ensure that the filler caps are securely replaced.
257.	Auto Klean filters	Turn handle once.
258.	Crankcase breather pipes	Ensure pipes are unobstructed.
259.	Pipelines and components	Inspect for obvious leaks.

Exhaust

260.	Exhaust manifold joints	Ensure that the joints are not blowing.

General

261.	Engine cowling	Clean as necessary and ensure that all engine cowling panels are not excessively dented and are correctly fitted and secure.

CHECK 1

Note :—1. *Any defect affecting safety must be rectified before the aircraft flies again.*

2. *A Certificate of Safety must be issued immediately on the completion of every Check 1.*

Propellers

262.	All surfaces	Inspect for cracks and other damage.
263.	Propeller and hub	Check, by feel, for looseness of the propeller on the hub and of the hub of the shaft.
264.	Boss securing nuts	After fitting a propeller and following each of the first three flights, check tightness of the boss securing nuts.
265.	Spinner	Inspect for damage and security.

Engines

266.	Cylinder head joints and sparking plugs	Inspect for signs of gas leakage.
267.	Engine bearer stirrups	Inspect for signs of movement.
268.	Cowling baffles	Inspect for damage and security.

Carburation

269.	Induction manifold drain pipe ...	Ensure that pipe is unobstructed.

Ignition

270.	All H.T. and L.T. cables and sparking plug connections	Inspect for cleanliness and security.
271.	Ignition switches	Check for correct mechanical functioning and ensure that they are left in the OFF position.
272.	Impulse starters	With ignition switches OFF and contact breaker covers in position check impulse starters for correct functioning and ensure that the advance and retard mechanism has free movement. Check cylinder compressions.

Exhaust

273.	Exhaust manifold and pipes	Examine for security, splits and cracks ; ensure that the joints are not blowing and that flange nuts are tight.

Controls

274.	Throttle and mixture	Test for freedom of movement and ensure that the air intake shutter functions correctly when the throttle controls are operated and that the friction dampers function satisfactorily.
275.	Fuel cock	Test for freedom of movement and full range of travel.

Fuel System

276.	Fuel pumps	Test for correct functioning by operating the priming levers. Ensure that the drain pipes are unobstructed and the filter bowls secure.
277.	Fuel tank vent pipes	Ensure that pipes are secure and unobstructed.
278.	Pipelines and components in engine bay	With the tank cocks turned ON inspect for security and fuel leaks.
279.	Tank dipstick	Stow securely.

Oil System

280.	Auto Klean filters	Turn handle once.
281.	Crankcase breather pipes	Ensure pipes are unobstructed.
282.	Pipelines and components in engine bay	Inspect for security and oil leaks, especially on the suction side of the pressure pump.

Accessories

283.	Starters and engine speed indicator generators	Examine for cleanliness and security of accessories and all connections

General

284.	Engine installation	Clean as necessary and ensure that tools or rags are not left lying on the engines or in the nacelle. Ensure that the nose cowl, cowling panels and airscoops are undamaged and secure.
285.	Engine run	Run up the engines and check the readings of the relevant instruments.

ENGINES

CHECK 2

Propellers

286.	Securing bolts ..	Security (do not over tighten).
287.	Bolt securing lock washer	Undamaged. Secure.
288.	Hub nut	Security.
289.	Front securing plate..	Cracks.
290.	All locking devices ..	Damage and security.

Engines

299.	Cylinders	Cracks, distortion and signs of overheating. Ensure that the holding down nuts are tight and that there are no oil leaks at the base flanges. Check compressions in conjunction with the sparking plug change.
300.	Push rod covers ..	Damage, oil leakage and security. Ensure that the springs of the telescopic portions function correctly.
301.	Rocker box covers .. *Note* :—Remove and flush out covers.	Damage to covers and oil seals. Ensure that the vent pipes are unobstructed and refill with fresh oil up to the correct level.
302.	Valve springs.. ..	Fractures.
303.	Valve clearances ..	Check and adjust if necessary. Ensure locknuts are tight.
304.	Push rod ball ends ..	Security.
305.	Rocker arm pads and valve thimbles	Excessive wear.
306.	Crankshaft	Excessive end play.

Carburation

318.	Carburettor .. .. *Note* :—Remove jets	Flush by operating the fuel pump priming levers.
319.	Flame trap element ..	Security.
320.	Air intake shutter spindle bearings	Lubricate.
321.	Induction manifold flange nuts and rubber connections.	Security

CHECK 3

Propellers

Note :—Remove propeller and clean exposed components.

291.	Securing bolts ..	Stretch, corrosion, chafing or other damage.
292.	Hub, front plate and bolt holes	Corrosion, elongation of bolt holes and other damage.
293.	Propeller blades, boss and (metal propellers) boss blocks	Cracks, deterioration of protective treatment and other damage.
294.	Spinner	Corrosion and damage to attachments.
295.	Propeller	Refit assembly, check track of blades and check tightness of securing bolts after each of the first three flights.

Engines

307.	Engine mounting and attachment fittings	Security.
308.	Engine bearer feet ..	Damage and security.
309.	Engine flexible mounting blocks	Cracks and deterioration.
310.	Mounting blocks retaining bolts and engine attachment bolts	Secure.

Carburation

322.	Carburettor body and securing brackets	Cracks, other damage and security.
323.	Rubber connections in induction system	Deterioration and security of clips.

CHECK 4	CHECK 5
Propellers *Note* :—Remove hub. **296.** Splines on hub and keyway in propeller shaft **297.** Key between hub and shaft **298.** Hub nut — Damage, wear and corrosion.	**Propellers**
Engines **311.** Engine mounting and bearer feet — Cracks, corrosion and other damage. **312.** Push rod and rocker arm ball and socket joints — Excessive wear. **313.** Rocker arm standards and spindles — Cracks, corrosion and other damage. Check security and condition of attachment bolts. **314.** Push rod cover rubber joints — Deterioration. **315.** Fireproof bulkhead .. — Damage, corrosion.	**Engines** **316.** Engine mounting members — Bowing. **317.** Fireproof bulkhead .. — Oil soakage into asbestos, etc.
Carburation **324.** Carburettor and induction manifold assembly — Corrosion.	**Carburation** **325.** Flame trap element .. — Obstructions, corrosion and other damage.

ENGINES

CHECK 2

Ignition

326.	Magnetos and distributors	Security.
327.	Distributor covers ..	Vent hole unobstructed.
328.	Contact breakers :—	
	Rocker arms ..	Freedom of movement.
	Points	Cleanliness, pitting and correct setting (gap is 0.012 in. + 0.001 in.).
329.	Sparking plugs .. *Note* :—Remove	Fit reconditioned and tested sets.
330.	Ignition switch wire connected to contact breaker cover	Serviceability and adequate length to permit full travel of advance and retard lever when throttle is operated. Security.

Exhaust

343.	Manifolds and extension pipes	Cracks, burning, blowing, particularly in way of heater muff if fitted. Security.
344.	Heater muffs ..	Damage and security. Ensure that fumes cannot enter cabin.

Controls

346.	Throttle, mixture and air intake shutter rods and levers	Excessive play in linkage, ball joints for excessive wear and security of components. Lubricate pulleys, lever pivots, pin and ball joints.
347.	Control cables ..	Fraying and corrosion particularly where they pass over pulleys or through fairleads. Ensure that turnbuckles are securely locked and that all end connections are secure. Check that cables are adequately tensioned.
348.	Arens control connections.	Security. Lubricate pin joints.
349.	Settings.	Correct neutral settings of all controls.

CHECK 3

Ignition

331.	Magnetos and impulse starter	Lubricate.
332.	Vernier couplings ..	Deterioration, oil soakage and other damage.
	Contact breakers :— (*Note* :—Remove)	
333.	Earthing brushes and end plate tracks	Cleanliness. Correct engagement of key on replacement.
334.	Carbon brushes ..	Good electrical contact, excessive wear and freedom of movement.
335.	Rocker arms ..	Springs for adequate tensions.
	Distributors :— (*Note* :—Remove)	
336.	Distributors and rotor mouldings	Cleanliness. Cracks and other damage.
337.	H.T. pick-up spring	Serviceability.
338.	Conduits, tubes and unions of harness	Chafing, signs of oil soakage and other damage. Security.
339.	H.T. and L.T. leads ..	Corrosion.

Exhaust

Controls

CHECK 4	CHECK 5
Ignition	**Ignition**
	340. H.T. pick-up slip rings and flange mouldings — Cleanliness, wear and other damage.
	341. H.T. leads (or ignition harness) and L.T. leads — Check insulation resistance.
	342. Impulse starter *Note*:—Remove, dismantle, and clean all components — Damage, excessive wear, lubricate.
Exhaust	**Exhaust**
345. Manifolds, extension pipes and heater muffs — Excessive corrosion.	
Controls	**Controls**
350. All control pulleys and cable guards — Corrosion and excessive wear.	**352.** All control cables .. — Damage, strain and deterioration of protective treatment.
351. Arens control outer casings — Damage and corrosion.	**353.** Cable pins and end connections — Excessive wear and corrosion of pins, etc.; ensure that holes in end fittings are not elongated.
	354. All control systems .. — Correct range of movement.

ENGINES

CHECK 2		CHECK 3	
Fuel System		**Fuel System**	
355. Tanks	Correct adjustment and security of slings. Leaks. Damage to shell and filler cap threads.	**360.** Tanks	Corrosion externally.
356. Pump filters	Damage to filter gauzes. Deterioration of joint washers. Correct fitment and locking after fitting bowls.	**361.** All metal pipelines and unions	Leakage. Corrosion Correct support and security of attachment.
357. Engine driven and priming pumps	Damage and security.		
358. Fuel cocks	Damage, leakage and security.		
359. Flexible pipelines and joints	Correct support and clips secure. Leakage. Kinking, chafing and other damage. Soakage of fireproof lagging—if fitted.		
Oil System		**Oil System**	
366. Tanks .. .. .. *Note* :—Drain and refill	Correct adjustment and security of slings. Leaks. Damage to shell.	**370.** Tanks	Corrosion externally.
367. Pressure filters .. *Note* :—Remove, drain casings and clean. Prime casing before refitting filter.	Damage to filter gauzes and joint washers.	**371.** All metal pipelines and unions	Leakage. Corrosion. Correct support and security of attachment.
368. Scavenge filter *Note* :—Remove, drain and clean housings.			
369. Flexible pipelines and joints	Leakage. Kinking, chafing and other damage. Soakage of fireproof lagging—if fitted. Correct support and clips secure.		
Instruments		**Instruments**	
376. All relevant instruments, their attachments and cables or pipelines connection	Security.	**379.** Capillary tubing ..	Chafing, particularly where tubing is in free lengths or is coiled.
377. All pipelines and unions	Correct support, leakage and security.		
378. Engine speed generator drive casing	Damage and security of end connections.		
Starter		**Starter**	

CHECK 4		CHECK 5	
Fuel System		**Fuel System**	
362. Tank sling attachment fittings	Corrosion and other damage. Security.	**364.** Tanks	Corrosion internally. Ensure that the sling cables and their rubber tube coverings are serviceable and that the tank strap packing is not deteriorated. Check that the strap rivets are not chafing the ends of the tanks. Complete a flow test of system and record results.
363. Pumps and fuel cocks	Corrosion.	**365.** All flexible pipes *Note* :—Remove ..	Deterioration and bore of pipes unobstructed.
Oil System		**Oil System**	
372. Tank sling attachment fittings	Corrosion and other damage. Security.	**373.** Tanks	Corrosion and other damage. Ensure that the sling cables and their rubber tube coverings are serviceable.
		374. Auto-Klean filter *Note* :— Remove element ..	Clean element and interior of filter body.
		375. All flexible pipes *Note* :—Remove ..	Deterioration and bore of pipes unobstructed.
Instruments		**Instruments**	
		380. Fuel contents gauge .. Oil pressure gauges .. Engine speed .. .. Engine speed indicators	Calibration check.
		381. Engine speed generator drive *Note* :—Dismantle drive	Wear, defects and lubricate.
		382. Engine speed generator gearbox	Lubricate.
Starter		**Starter**	
383. Bolts securing front and rear portions of motor gearbox housing	Security.	**385.** Gearbox .. .. *Note* :— Remove starter motor	Pack with grease.
384. Starter motor .. *Note* :—Clean commutator and brush gear	Commutator for scoring. Brushes for excessive wear and freedom of movement in their holders. Springs for correct tension.	**386.** Starter motor bearings	Excessive wear. Lubricate.

OVERHAUL LIFE SHEET

The overhaul life, in flying hours, for the following components is :—

1. Engine ... ... 800 hours.
2. Generator (wind driven) ... ... 500 hours.
3. Starter motors ... ... Engine life.
4. Blind flying instruments ... ... 600 hours.
5. Engine speed indicator and generator (K.B.B. type 100/A2) 500 hours.
6. Other types of engine speed indicator and generator ... ... 600 hours.

The following should be overhauled and/or tested as appropriate, after the period stated has elapsed :—

7. Lifebelts (inflation test and condition check) ... ... 3 months.

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